

Hatchery Backgrounder
Short History of Columbia River Salmon Hatchery Science and Operation
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Hatchery Science

Anadromous fish hatcheries have operated on the Columbia River for over 110 years. Most are constructed to mitigate loss of habitat when hydro-power dams blocked fish from moving upstream. Very little information about the biology and culture requirements of salmon and steelhead was available during the early years of fish culture. During that time, hatchery success was measured primarily by the total numbers of fish released.

Prior to the 1950s, much of the knowledge of fish culture was acquired through trial and error rather than through scientific methods. Increased research in the late 1950s and early 1960s revolutionized fish culture practices. By the early 1960's, better diets and larger hatcheries made it possible to increase the size and number of fish being released. Marking experiments were valuable in demonstrating higher survival rates in some cases through releasing larger fish, and in determining the best time to release fish to optimize survival.

Advances in other areas of fish culture yielded a better understanding of optimum rearing densities, water treatment, and facility design. Substantial progress was also made in understanding fish pathogens and parasites and in developing means for their prevention, treatment and control.

Hatchery Management

Early management of Columbia River salmon and steelhead did not take into account the importance of individual stocks. Basic knowledge of fish genetics was limited, and managers commonly transferred stocks among hatcheries. There was also limited information available on the interaction between hatchery and wild stock.

Rapid increases in hatchery fish survival in the 1960s was a boon to the sport and commercial fisheries but also created management problems. Mixed-stock fisheries that relied heavily on hatchery fish often overfished individual wild stocks. Managers also suffered from a lack of adequate data for identifying individual stocks in a mixed-stock fishery.

In the 1970s, scientists had increased their knowledge of the genetic difference among salmon and steelhead through analysis of migration, life history, biochemical, and morphological data. This knowledge led to more restrictive management policies limiting the transfer of stocks into and throughout the Columbia River Basin. Some streams were designated for management of self-sustaining natural production, and hatchery fish release was prohibited.

In recent years, managers have shifted more toward regulating the rate of harvest on individual stocks in mixed-stock fisheries. This change resulted from an increased emphasis on protecting stock diversity, from improvements in ocean and in-river fishery management, and from Indian treaty harvest rights determined by court decisions.